

Appl. No.: 10/529,604
Amdt. Dated September 24, 2008
Reply to Office Action of May 27, 2008

Amendments to the Drawings:

A Replacement Sheet 6/9 is attached, on which reference numeral "118" has been added to Figure 7, to address the objection in Section 3 of the Office Action. The objection also asserted that numeral "47" does not appear in the drawings, but in fact it appears in Figure 4. Thus, with the submission of the attached Replacement Sheet 6/9, it is submitted that the objections to the drawings have been overcome.

REMARKS/ARGUMENTS

Claims 1-23 are pending. Claims 1-5 and 8-23 were rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent No. 5,216,316 to Ipcinski in view of U.S. Patent No. 5,438,219 to Kotzan et al. and U.S. Patent No. 4,384,482 to Snyder. Claims 6 and 7 were indicated to be patentable in subject matter.

The Office Action asserted that item **60** in Ipcinski corresponds to the actuating mass, item **70** corresponds to the piezoelectric element, and item **12** corresponds to the control circuitry of the claims. The Office Action conceded that Ipcinski's control circuitry does not form at least part of the actuating mass **60**, but asserted that Kotzan teaches a piezoelectric device in which the control circuitry **126** is mounted on the top surface of the device. The Office Action then asserted that this teaching would have made it obvious to mount Ipcinski's control circuitry **12** on the top surface of the device (which is the actuating mass **60**), thereby meeting the limitation in the claims.

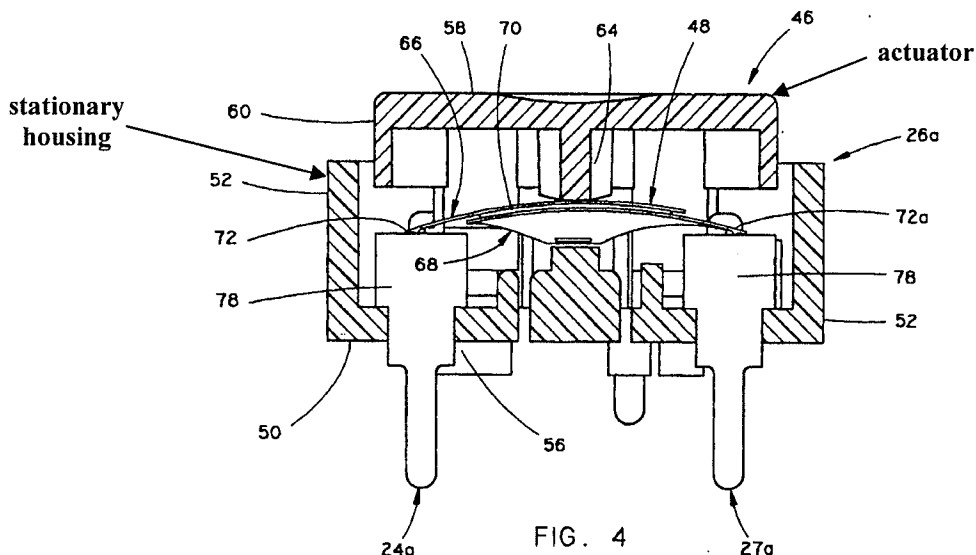
Summary of Telephonic Interview

The undersigned thanks the Examiner and his supervisor for the courtesy of conducting an interview on September 11, 2008. In the interview, the undersigned explained how the present claims distinguish over the Ipcinski, Kotzan, and Snyder references. The substance of the undersigned's remarks in the interview is reflected in the arguments presented below.

Response to Rejections Under 35 U.S.C. 103(a)

The power generator of Claim 1 is a self-powering device for mounting inside a pneumatic tire. The device employs a piezoelectric element for generating an electrical current when the element is deformed. Inertial forces on an actuating mass portion of the device cause the actuating mass to exert force on the piezo element. In accordance with the claimed invention, the control circuitry of the device forms at least part of the actuating mass.

The Office Action cited Ipcinski as the primary reference. Ipcinski in Figure 4 discloses a piezoelectric transducer or switch designed to be manually activated by a person pressing on the top portion **58** of the actuator **46** of the device (col. 4, lines 4-14):



Ipcinski's device includes a main housing or base portion **50** that is stationary in operation. In use, the stationary housing **50** would be mounted on a substrate such as a circuit board. Mounted inside the stationary housing is a piezoelectric film **70** disposed between two resiliently flexible contacts ("first and second dome portions") **66** and **68**. The actuator **46** is movable relative to the stationary housing **50**. Although not shown in FIG. 4, it is evident that the control circuitry of the device is mounted in the stationary housing **50**. As described at col. 4, lines 4-14, to operate the device to produce a voltage pulse, manual pressure is applied to the top portion **58** of the actuator **46**, forcing the subassembly **48** of the first and second dome portions **66**, **68** and the piezoelectric film **70** to flex, mechanically distorting the piezoelectric film and thereby creating a pulse of one sense (e.g., positive voltage); releasing the actuator **46** results in the subassembly **48** resiliently flexing in the other direction, causing a pulse of the opposite sense (e.g., negative voltage).

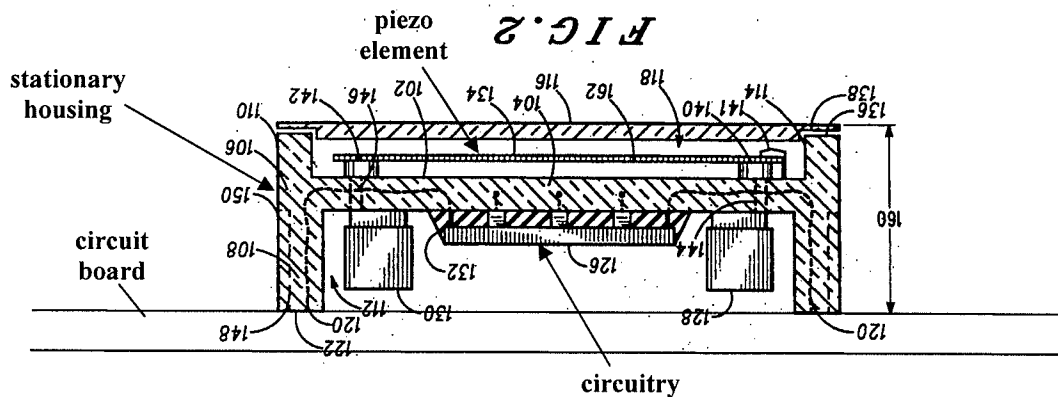
The important aspect of Ipcinski to realize is that the control circuit (see circuit **12** in FIG. 1) and the piezoelectric element (piezoelectric film **70** in FIG. 4; piezo element **10** in FIG.

1) are *both mounted on the stationary housing part* (base portion **50** in FIG. 4; housing **26** in FIG. 1). The Office Action in fact conceded that Ipcinski's control circuitry does not form at least part of the actuating mass **60** as claimed in Claim 1.

To meet that limitation of Claim 1, the Office Action cited Kotzan. Specifically, the embodiment shown in FIG. 2 was cited as allegedly teaching that the control circuitry **126** is mounted on the top of the device. The Office Action then asserted that since Ipcinski's actuator **46** is the top surface of his device, it would have been obvious based on Kotzan to mount Ipcinski's control circuitry on the top surface of the actuator **46**, thereby meeting the limitation of Claim 1.

Applicant respectfully submits that Kotzan has been misinterpreted, and that in fact this reference teaches away from the claimed invention. It is important first to recognize that Kotzan does not disclose any type of piezoelectric device that is actuated by way of an actuator impinging on a piezoelectric element. Rather, Kotzan relates to a piezoelectric oscillator package for use in devices such as cellular telephones, the oscillator comprising a frequency control device such as a temperature-compensated crystal oscillator that provides a reliable and stable oscillator output (col. 1, lines 13-17). In this sense, Kotzan is only tangentially related to the present invention in that both happen to include piezoelectric elements.

Second, and more fundamentally, it is important to recognize that Kotzan actually teaches the same type of placement of the control circuitry as Ipcinski does. At col. 3, lines 16-19, Kotzan indicates that the upper end portion **122** of the oscillator package shown in FIG. 2 is planar for providing a good contact to a circuit board to which it will be connected. In that sense, the device is shown in FIG. 2 in an upside down orientation relative to how Ipcinski shows his device. Accordingly, below, FIG. 2 is shown in its proper orientation in which it would be mounted atop a circuit board:



It will be noted that Kotzan teaches that the control circuitry **126** is mounted on the main stationary housing, and the piezoelectric element **134** is also mounted on the same stationary housing. Similarly, Ipcinski also teaches mounting both the piezo element and the circuitry on the stationary housing part.

Thus, Kotzan (which completely lacks any element comparable to the actuator **46** of Ipcinski) would not have suggested modifying Ipcinski to mount the control circuitry on the actuator **46**.

Additionally, Kotzan does not teach or suggest mounting a control circuit on a “top surface” of his device, if “top surface” is defined as the opposite surface to the one that is against the substrate (circuit board, above) on which the device is affixed. Rather, Kotzan teaches mounting the circuitry on the *bottom* surface of the device. If this teaching were applied to Ipcinski, it would lead the skilled person to mount the circuitry on the bottom of the stationary housing **50**. The skilled person would never have been led by Kotzan to mount the circuitry on the top surface of Ipcinski’s actuator **46**. Indeed, there are good reasons not to do this, chief among which is that this top surface is the surface on which manual pressure is applied to activate Ipcinski’s device.

Snyder also fails to teach a power generator having control circuitry forming at least part of an actuating mass. Snyder's circuitry **18** is mounted on the stationary housing **2**, just as in Ipcinski and Kotzan.

For all of the above-noted reasons, the combination of Kotzan with Ipcinski and Snyder would not have suggested the power generator as claimed in Claim 1. The prior art of record is devoid of any teaching or suggestion of a power generator in which the control circuitry forms at least part of the actuating mass. Accordingly, Claim 1 is patentable over the cited references.

Each of the dependent claims is patentable for at least the reason that it includes all of the limitations of Claim 1. Additionally, the prior art of record does not teach or suggest a power generator combining the features of Claim 1 with the additional features of each of the dependent claims. Thus, all pending Claims 1-23 are patentable.

Other Formality Issues

The Office Action indicated that the Declaration is defective because it fails to list the residence city and state/country for each inventor and it fails to list the citizenship for each inventor. Applicant is filing concurrently herewith a new Application Data Sheet to supply the residence information. Applicant has not yet been able to secure a Supplemental Declaration from the one inventor, Stephen John Bowles, for whom citizenship was not identified on the originally filed Declaration. However, Applicant is continuing in its efforts to get Mr. Bowles to sign the Supplemental Declaration, which will be filed as soon as it is available.

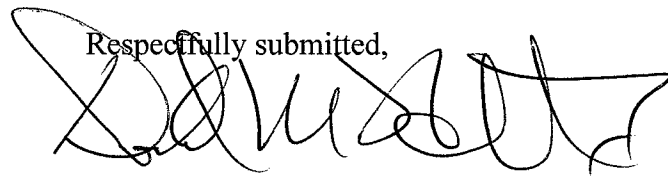
Finally, the Office Action indicated that no certified copy of the UK priority document has been received by the USPTO. In this national-stage application of a PCT application, the USPTO is supposed to request WIPO to furnish a copy of the priority document (see MPEP 1893.03(c), part II). Accordingly, Applicant assumes that no further action on Applicant's part is required. However, if need be, Applicant may be able to obtain a certified copy and forward it to the USPTO.

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Conclusion

Based on the above remarks, it is submitted that the application is in condition for allowance.

It is not believed that extensions of time or fees for net addition of claims are required, beyond those that may otherwise be provided for in documents accompanying this paper. However, in the event that additional extensions of time are necessary to allow consideration of this paper, such extensions are hereby petitioned under 37 CFR § 1.136(a), and any fee required therefor (including fees for net addition of claims) is hereby authorized to be charged to Deposit Account No. 16-0605.

Respectfully submitted,


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